

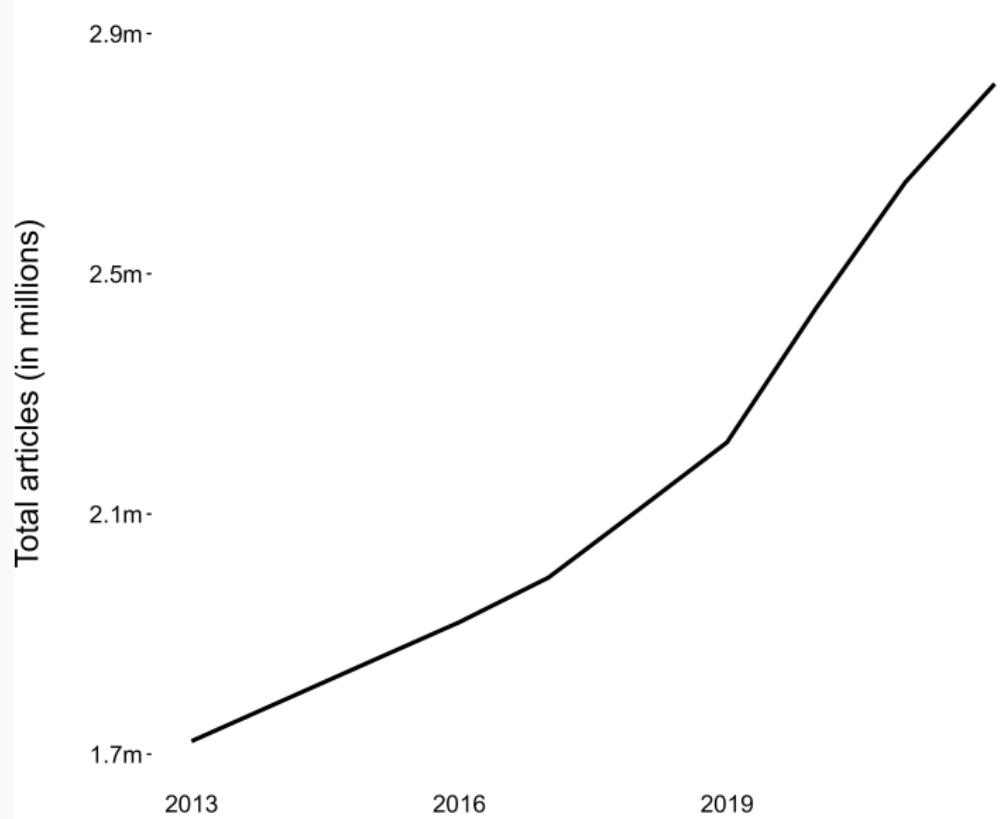
We've got issues

Understanding the current strain on scientific publishing

M. A. Hanson, P. Gómez Barreiro, **P. Crosetto**, D. Brockington

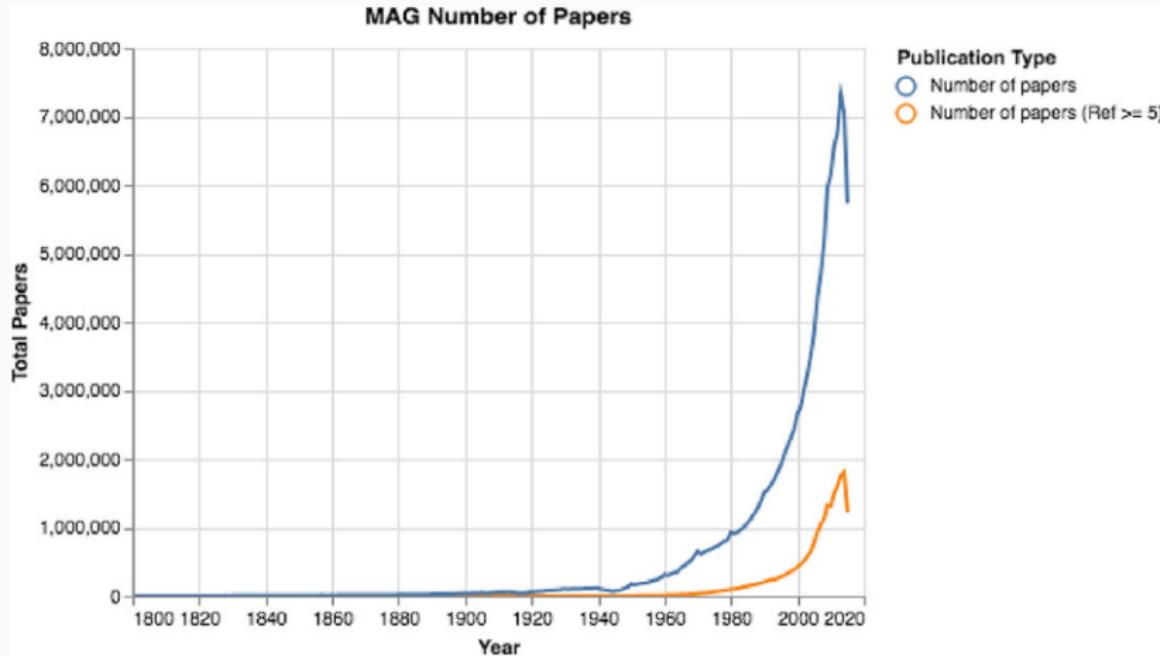
Basel – May 2nd, 2024

Academic publishing is undergoing an **exponential** growth



Source: N papers -- Scimago website data; N PhDs - OECD

This is not news



Source: Fire & Guestrin 2019

...and people have been complaining about it for a **long** time

In 1958, when James D. Watson worked his way up to the rank of associate professor at Harvard, the young biochemist had on his curriculum vitae 18 papers. One of them, published 5 years earlier, described the structure of deoxyribonucleic acid.

Today, the bibliography of a candidate facing a similar climb often lists 50 or even 100 papers.

As the comparison suggests, paper inflation has become a fact of academic life during the past two decades. This is

Science, March 1981

ance and impudence.

Aristotle, when he enumerated the purposes (by which an author must be guided) and had come to the last one, therefore said: 'Everything else is either superfluousness or greed', by which he meant ignorance and insolence.

34 The great number of scholarly works available is an obstacle on the path to attaining scholarship

It should be known that among the things that are harmful to the human quest for knowledge and to the attainment of a thorough scholarship are the great number of works available, the large variety in technical terminology (needed for purposes) of instruction, and the numerous methods (used in those works). The student is required to have a ready knowledge of all that. Only then is he considered an accomplished scholar.

Thus, the student must know all the works, or most of them, and observe the methods used in them. His whole lifetime would not

OLD MAN YELLS AT CLOUD

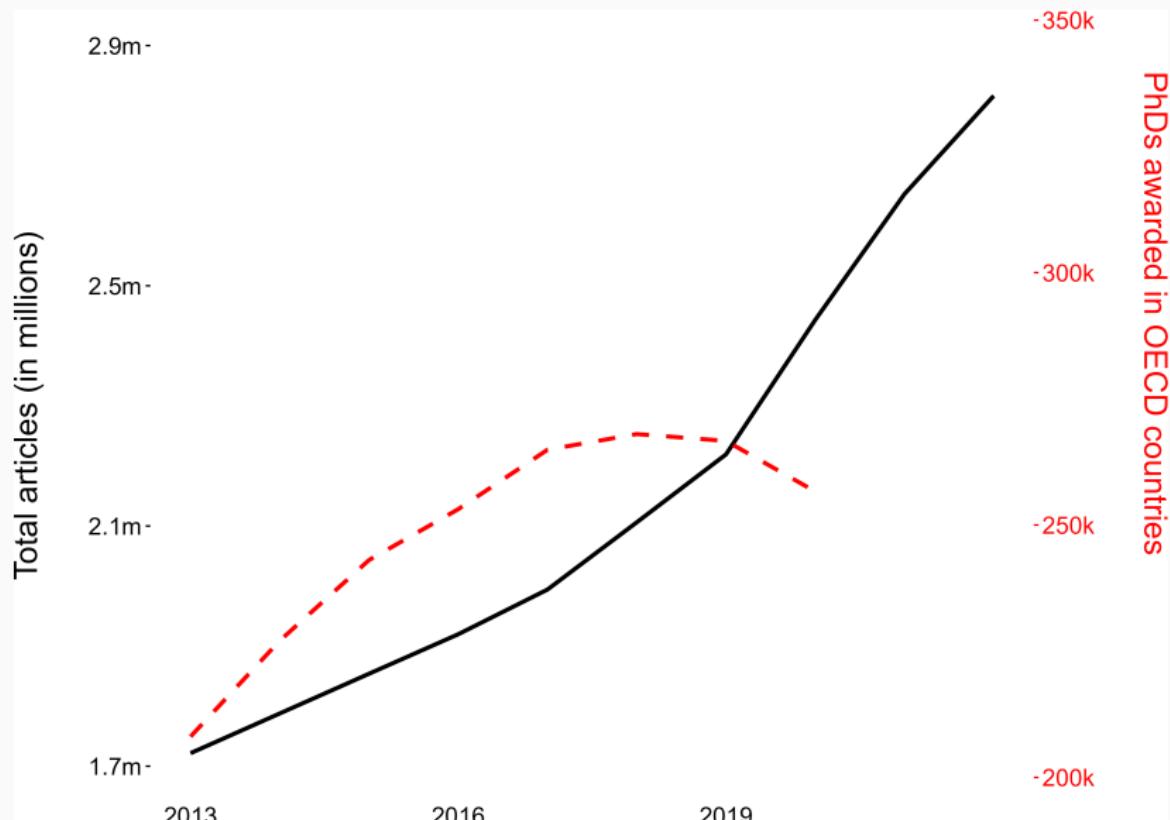


Older Abraham Simeon

This is mostly a good thing

- More scientists around
- More funds for research
- Open Access: more results available to anyone
- Web tools: faster dissemination of ideas
- Lower file drawer effects
- More replications, robustness, reviews, meta-analyses

But the **number of scientists** has hit a limit



Source: N papers -- Scimago website data; N PhDs - OECD

...and we've got issues

Editors resigning over high fees



Chris Chambers  @chrisdc77 · 16h

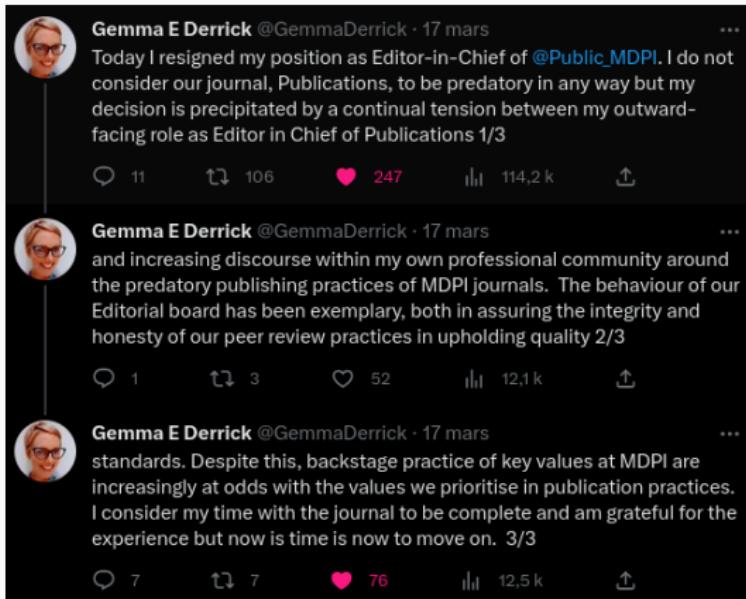
Following Elsevier's decision to raise the APC for *NeuroImage* to \$3,450, all editors (inc. EiCs [@fmrib_steven](#) [@tobergmann](#) [@BirteUta](#)) from *NeuroImage* and *NeuroImage:Reports* have resigned, effective immediately. I am joining this action and have also resigned [imaging-neuroscience.org/Announcement.p...](#)

Elsevier: *NeuroImage* transition - all editors have resigned over the high publication fee, and are starting a new non-profit journal, *Imaging Neuroscience*

Summary: *NeuroImage* has long been the leading journal focusing on imaging neuroscience, with both the highest impact factor and the largest number of papers published annually. *NeuroImage*'s editorial team has tried to convince Elsevier to reduce the publication fee from \$3,450, as we believe large profit is unethical and unsustainable. Elsevier is unwilling to reduce the fee; therefore, with great regret, all editors (more than 40 ~~and~~ **all** editors) of *NeuroImage* and *NeuroImage:Reports* have resigned. We are starting a new non-profit Open Access journal, *Imaging Neuroscience*, intended to replace *NeuroImage* as our field's leading journal.

19 671 1,617 360,6 k

...and we've got issues



Gemma E Derrick @GemmaDerrick · 17 mars ...
Today I resigned my position as Editor-in-Chief of [@Public_MDPI](#). I do not consider our journal, Publications, to be predatory in any way but my decision is precipitated by a continual tension between my outward-facing role as Editor in Chief of Publications 1/3

11 106 247 114,2 k 

Gemma E Derrick @GemmaDerrick · 17 mars ...
and increasing discourse within my own professional community around the predatory publishing practices of MDPI journals. The behaviour of our Editorial board has been exemplary, both in assuring the integrity and honesty of our peer review practices in upholding quality 2/3

1 3 52 12,1 k 

Gemma E Derrick @GemmaDerrick · 17 mars ...
standards. Despite this, backstage practice of key values at MDPI are increasingly at odds with the values we prioritise in publication practices. I consider my time with the journal to be complete and am grateful for the experience but now is time is now to move on. 3/3

7 7 76 12,5 k 

Editors resigning
over **bad publisher practices**

...and we've got issues

Paper mills
mass producing
fake articles

NEWS FEATURE | 23 March 2021

The fight against fake-paper factories that churn out sham science

Some publishers say they are battling industrialized cheating. A *Nature* analysis examines the 'paper mill' problem – and how editors are trying to cope.

...and we've got issues



Nick Wise
@nickwizzo

...

The guest editor of an open special issue in [@Symmetry_MDPI](#) on e-learning openly **selling authorship of papers on e-learning**
mdpi.com/journal/symmet...

Traduire le Tweet

The can join the team of authors, if you wish.

The paper will be indexed in both Scopus (Q4) and Web of Science.
1st position costs €390, 2nd position €290, positions 3 to 6 €200.
Payment is after acceptance.
Would you like to be a part of the team? Register at

* ICT

Papers will be published in a book series indexed in Scopus (Q4) and Web of Science.
1st position costs €390, 2nd position €290, positions 3 to 6 €200.
Payment is after acceptance.
If you wish to join, please register at
<https://rtsarev.ru/coauthor/>

**Call for Scopus
coauthors
E-learning and
Economics
200 euro**

If you wish to be in the list of co-authors, you are welcome to join.
1st position costs €390, 2nd position €290, positions 3 to 6 €200.
Payment is after acceptance.
Are you with us? Please, register at
<https://rtsarev.ru/coauthor/>

#scopus #webofscience #wos
#science #coauthor #coauthorship

8:29 PM · 4 mars 2023 · 35,6 k vues

Authorship sales
rings

...and we've got issues

Stunningly **prolific**
authors

EL PAÍS

ce & Tech

SILICON VALLEY - YOUTUBE - I

SCIENTIFIC ETHICS >

One of the world's most cited scientists, Rafael Luque, suspended without pay for 13 years

The prolific chemist, who has published a study every 37 hours this year, has been sanctioned by the University of Córdoba over his research work for other institutions in Russia and Saudi Arabia

...and we've got issues

Pay to get faster
through peer-review

Dr Elizabeth Gadd @lizziegadd@mastodon.online
@LizzieGadd

...
"Accelerated publication" charges still make my eyes pop out of my head. taylorandfrancis.com/partnership/co...

Traduire le Tweet

Publish in 3 – 5 weeks from submission*

- Submission to acceptance: 2-3 weeks
 - 1-2 weeks for peer review†
 - 1 week for author revision
- Acceptance to online publication: 1-2 weeks, with proofs within 5 working days and 48 hours for author review

Publish in 7 – 9 weeks from submission*

- Submission to acceptance: 5-6 weeks
 - 3-4 weeks for peer review
 - 2 weeks for author revision
- Acceptance to online publication: 2-3 weeks, with proofs within 10 working days

Cost per article: \$7000 / €6200 / £5500

ALT

Cost per article: \$3900 / €3400 / £3000

4:30 PM · 4 avr. 2023 · 36,9 k vues

...and we've got issues



The screenshot shows the homepage of the Public Health Reviews (PHR) journal. The header includes the PHR logo, the journal name, a CiteScore of 9.6, a 'How to publish' link, and a 'Submit' button. Below the header are download and share icons. The main content area features an editorial article titled «I Do Not Have Time»—Is This the End of Peer Review in Public Health Sciences? by Nino Künzl et al. The article is dated 17 November 2022 and has a DOI of <https://doi.org/10.3389/phrs.2022.1605407>. The article summary and author details are partially visible.

PHR Public Health Reviews

CiteScore 9.6 How to publish Submit

EDITORIAL

Public Health Rev. 17 November 2022
<https://doi.org/10.3389/phrs.2022.1605407>

«I Do Not Have Time»—Is This the End of Peer Review in Public Health Sciences?

Nino Künzl^{1,2,3*}, Anke Berger^{1,3}, Katarzyna Czabanowska⁴, Raquel Lucas⁵, Andrea Madarasova Geckova⁶, Sarah Mantwill⁷ and Olaf von dem Knesebeck⁸

Editors **unable**
to find referees

...and we've got issues

SCIENCEINSIDER | SCIENTIFIC COMMUNITY

Fast-growing open-access journals stripped of coveted impact factors

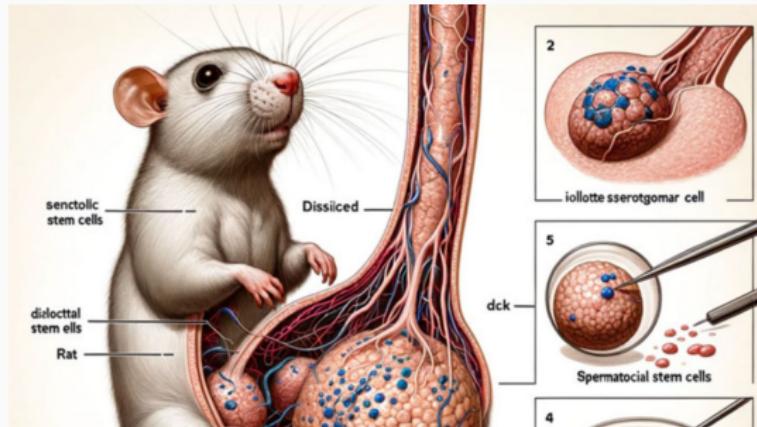
Web of Science delists some 50 journals, including one of the world's largest

28 MAR 2023 • 5:55 PM • BY JEFFREY BRAINARD



Mega-journals being
delisted from WoS

...and we've got issues



All this **before**
the 2023 AI explosion

How does publishing **work?**

A caveat: no need for "predatory" labels

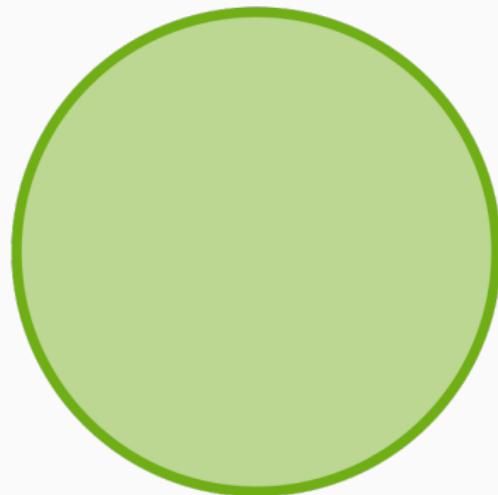
We don't think binary labels improve our understanding

There'll be no "predatory" judgments here

- outright fraudsters **do** exist (publishers *and* **authors**)
- agents just follow their **interest**
- **market rules** generate outcomes
- outcomes can be good or bad
 - for the different actors
 - for the **public good** that is science

Behold the scientific publishing system

Publishers



Researchers

Funders

What does the system **do?**

What are the **functions** the system fulfills...

for **Scientists**

- dissemination
- reputation
- sorting

for **Publishers**

- profits
- dissemination
- sustainability

for **Funders**

- selection
- prioritization
- public access

What do the different actors **want**?

What do different actors want from the system?

Scientists

- high reputation
- low effort
- stability

Publishers

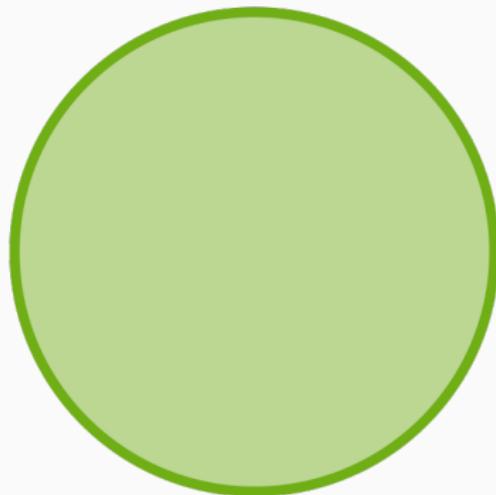
- high reputation
- high quantity
- high revenue

Funders

- stability
- true signal
- low spending

The system, **growing under strain**

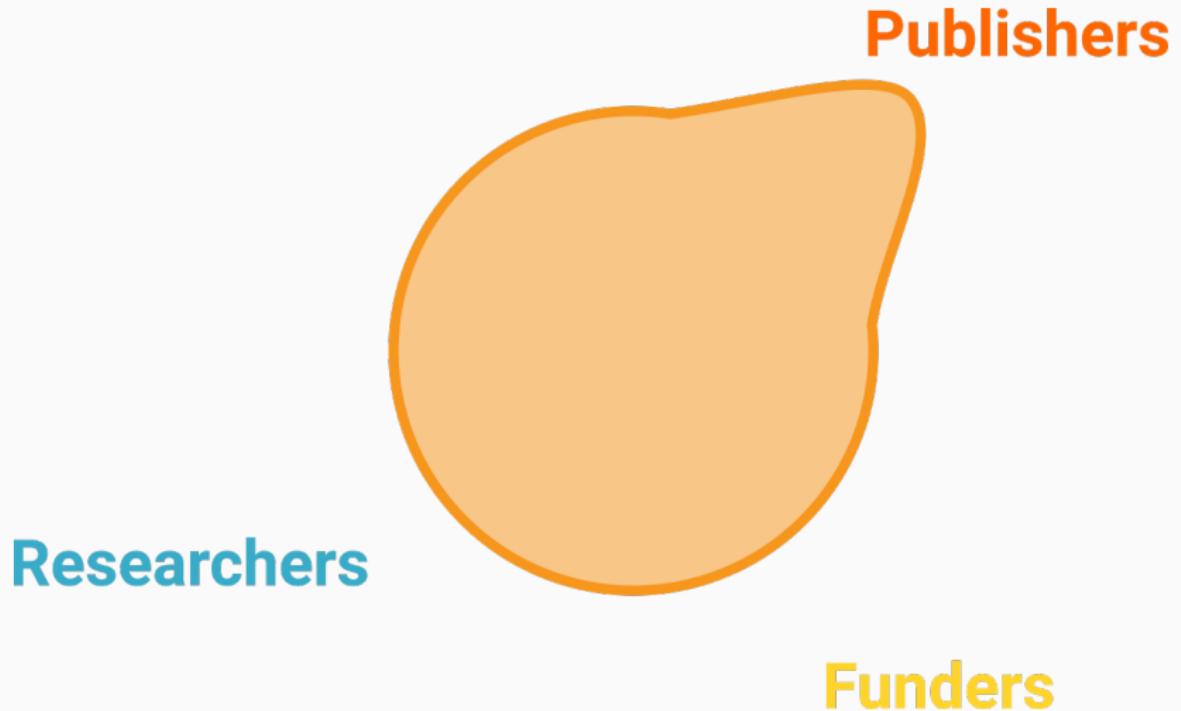
Publishers



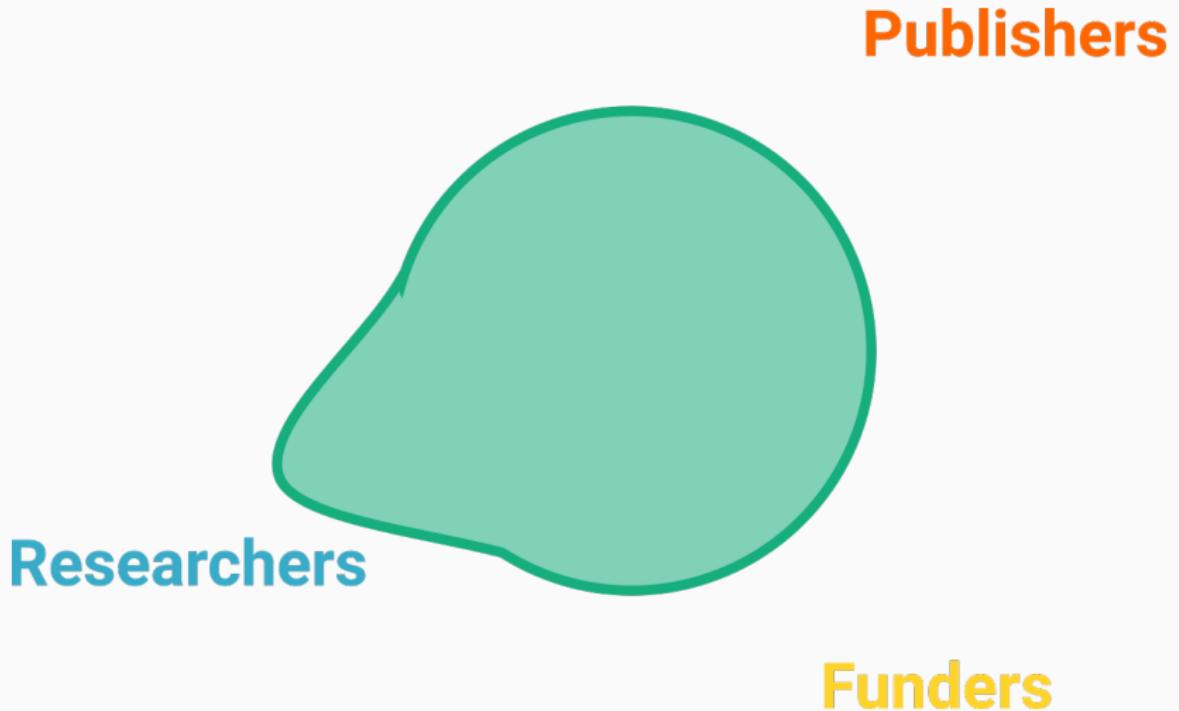
Researchers

Funders

The system, growing under strain

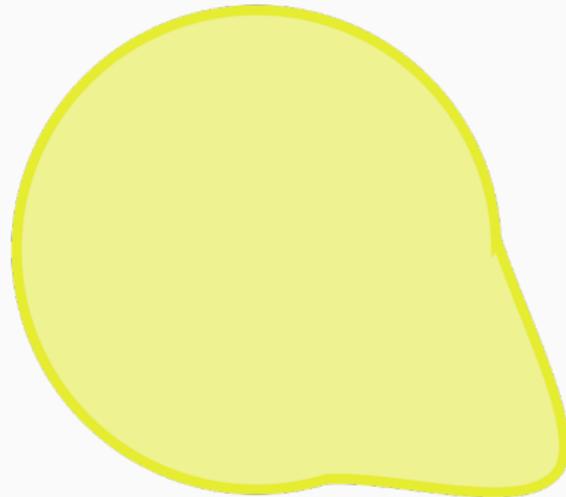


The system, **growing under strain**



The system, growing under strain

Publishers



Researchers

Funders

What is **going on?**

More is different

Growth is not **more of the same**:
growth means **change**.

- new practices
- new business strategies
- new incentives
- new constraints
- new **meanings**

4 August 1972, Volume 177, Number 4047

SCIENCE

More Is Different

Broken symmetry and the nature of the hierarchical structure of science.

P. W. Anderson

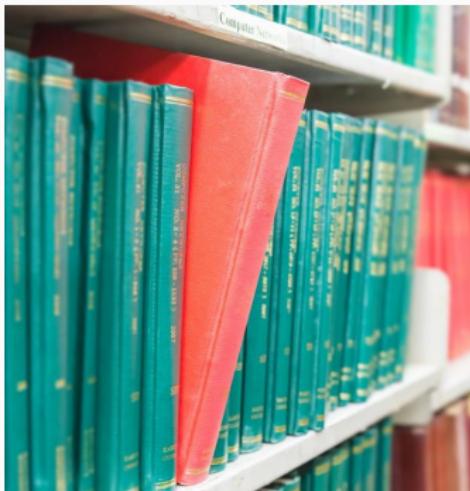
less relevance they seem to have to very real problems of the rest of science, much less to those of science.

The constructionist hypothesis is down when confronted with the difficulties of scale and complexity behavior of large and complex systems of elementary particles. It can not be derived from that of a simple extrapolation of the entities of a few particles. Instead each level of complexity entirely properties appear, and the understanding of the new behaviors require

A semantic shift

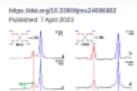
"Journal"

used to mean



A physical object with limited available space

now it **also** means



Case Report
Germine Variants in MLH1 and ATM Gene in a Young Patient with MLH1 in a Precancerous Colonic Lesion
By Antonio Nobato-etal.
Int J Mol Sci 2023, **24**(5), 5870;
<https://doi.org/10.3390/ijms2405870>



Article
Molecular Analysis of RAP1 Protein-Induced Endothelial Permeability and vWF Secretion
by Yuxi Guo and Venkateswaran Kamaraj
Int. J. Mol. Sci. 2023, 24(6), 3496
<https://doi.org/10.3390/ijms24063496>



Open Access Article

GROWTH IN MCF-7 HUMAN BREAST CANCER CELLS

Abstract Interstitial cystitis/cysteitis phosphorylation (ICCP) system dysfunction in cancer cells has been exploited as a target for anti-cancer therapeutic intervention. The downregulation of CRH-interacting factor 1 (CRIF1), an essential miRNA-riboswitch factor, can impair mitochondrial function in various cancer cells. In this study, we investigated CRIF1-based therapy.

[This article belongs to the Special Issue Nanoparticles in Nanobiotechnology and Nanomedicine]

► Show Figures

Open Access



[This article belongs to the Special issue **Macroscopic and Microscopic Thermodynamics: From Fundamentals to Present Applications 2.0**]

► Show Figures

3 4 5 6 7 8 9 10

Comments



A limitless electronic
repository with a name

A semantic shift

"Publication"

used to mean

- a handful of journals
- long delays
- low acceptance rates
- free for authors
- do it and thrive

⇒ *good science rejected?*

now it also means

- thousands of journals
- short delays
- high acceptance rates
- authors pay
- don't do it and die

⇒ *bad science accepted?*

A semantic shift

"Special issue"

used to mean

- A once-in-a-while issue
- About a special topic
- Strict editor control
- regular > special

now it also means

- A many-a-day issue
- About any topic
- Relaxed editor control
- special > regular

A semantic shift

"Publisher business model"

used to mean

- Many small journals
- Readers pay
- \$ through subscription
- "*Polish your gems*"

Incentive to ↑ **quality**,
quantity? ...

now it **also** means

- Few mega-journals
- Authors pay
- \$ through publication
- "*Get authors on board*"

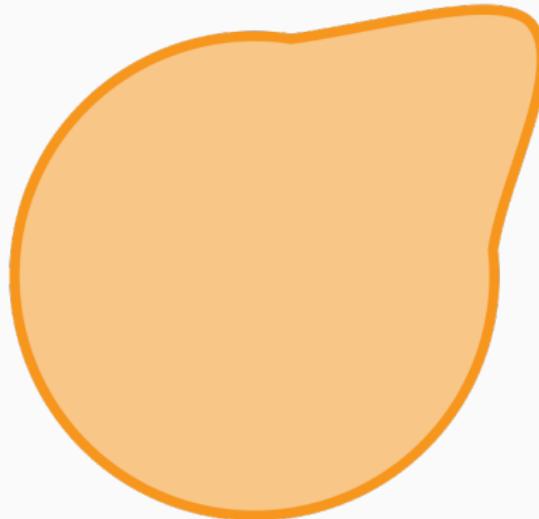
Incentive to ↑ **quantity**,
quality? ...

Our analysis:

**Understanding the strain put on the system
by evolving publishers practices**

So, this

Publishers



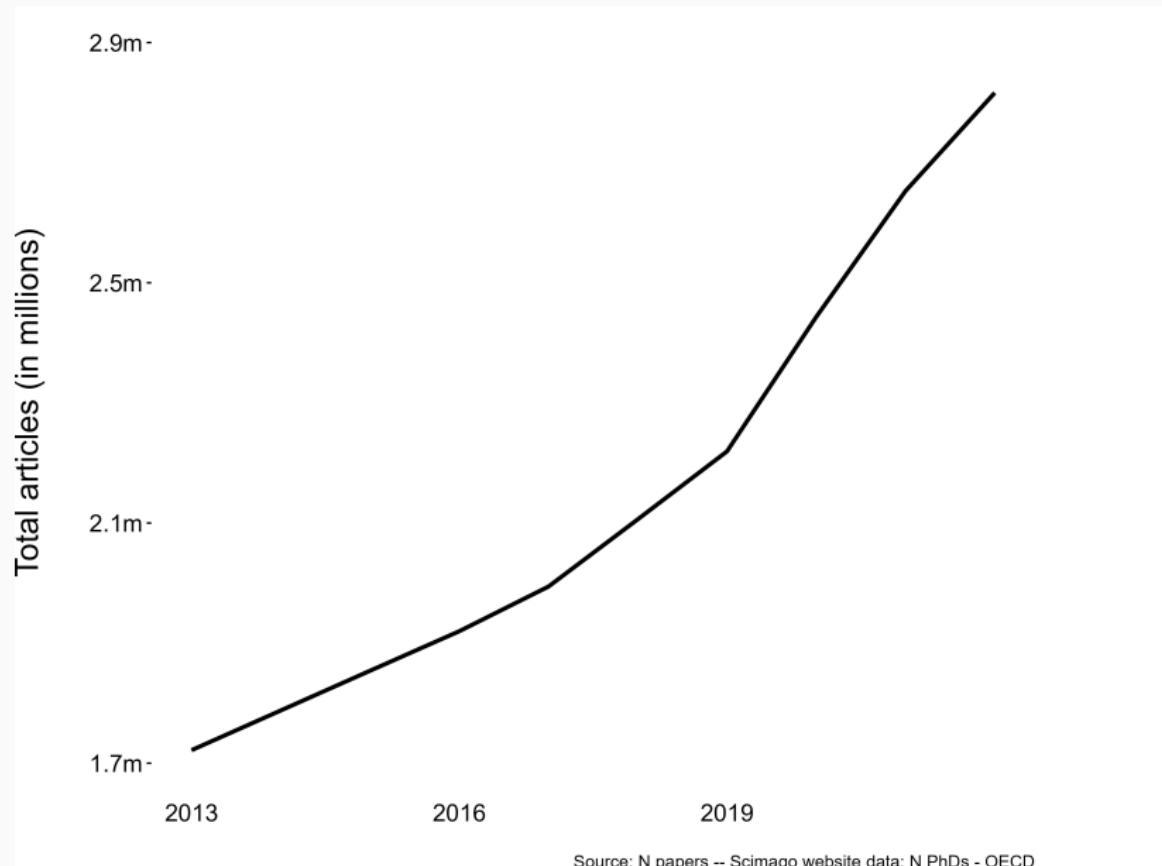
Researchers

Funders

Wanna know more? get our preprint



Which trends and threats hide behind this exceptional growth?



Analysis plan

We single out **five** indicators of strain on the system:

- Number and **size** of journals
- Number and role of **Special Issues**
- **Turnaround** times
- **Rejection** rates
- Impact Factor **inflation**

None of them is critical *per se*

together they indicate **strain imposed by publishers**

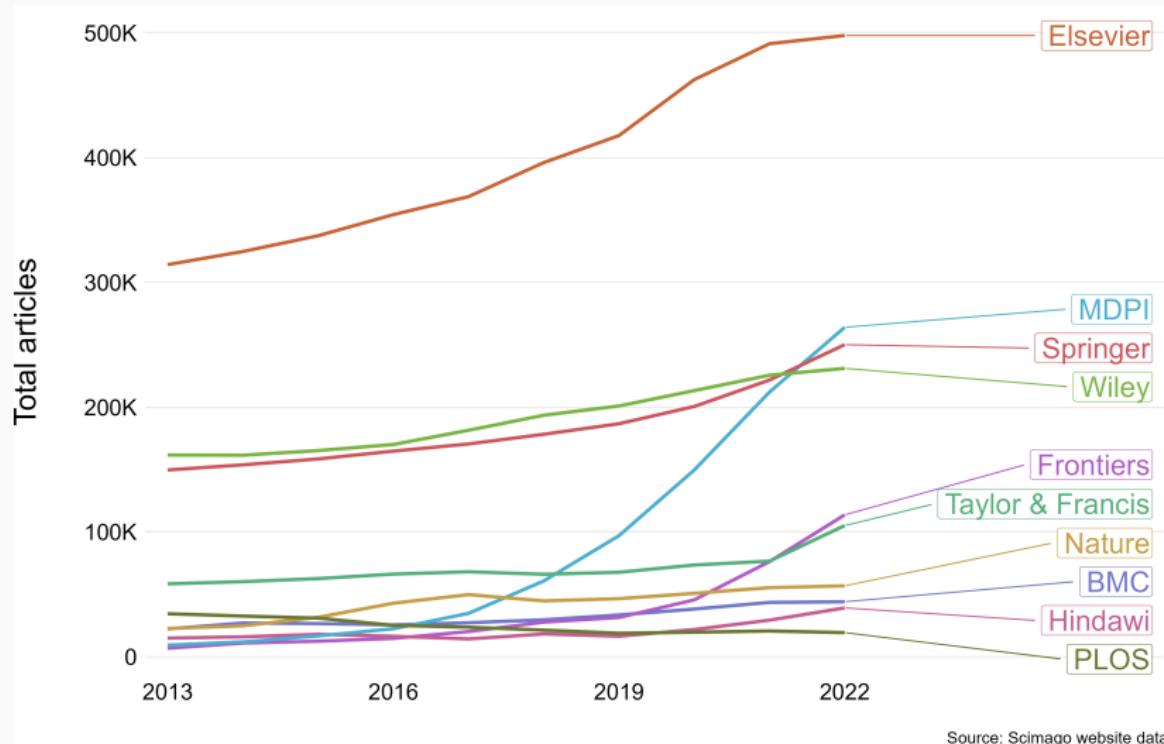
Data sources

We exploit data coming from various sources:

- A full scrape of the **Scimago Journal Rankings** database
used for: comparisons across publishers, IF, SJR rank...
- OECD and US NSF data
used for: number of PhDs awarded per year
- **Web scrape** of MDPI, Frontiers, Hindawi, PLoS
used for: turnaround times, special issues
- First hand data from **publisher reports** and websites
used for: rejection rates

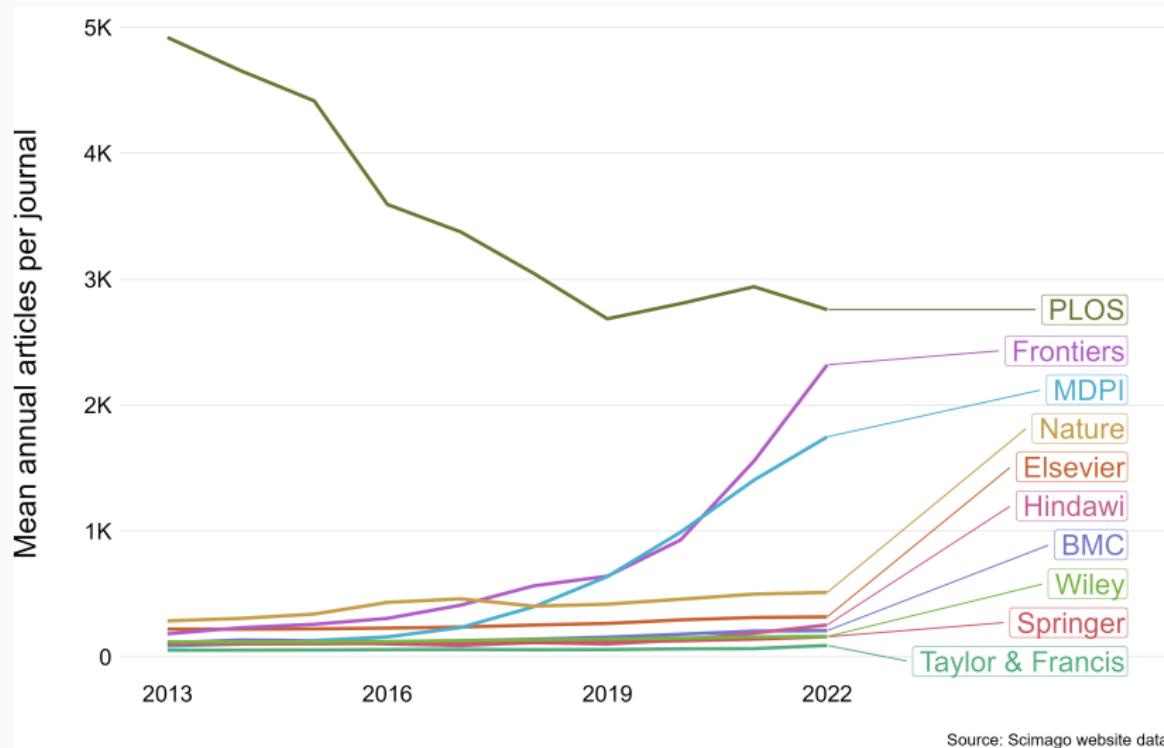
Number of articles & journal size

The rise of new publishers



Source: Scimago website data

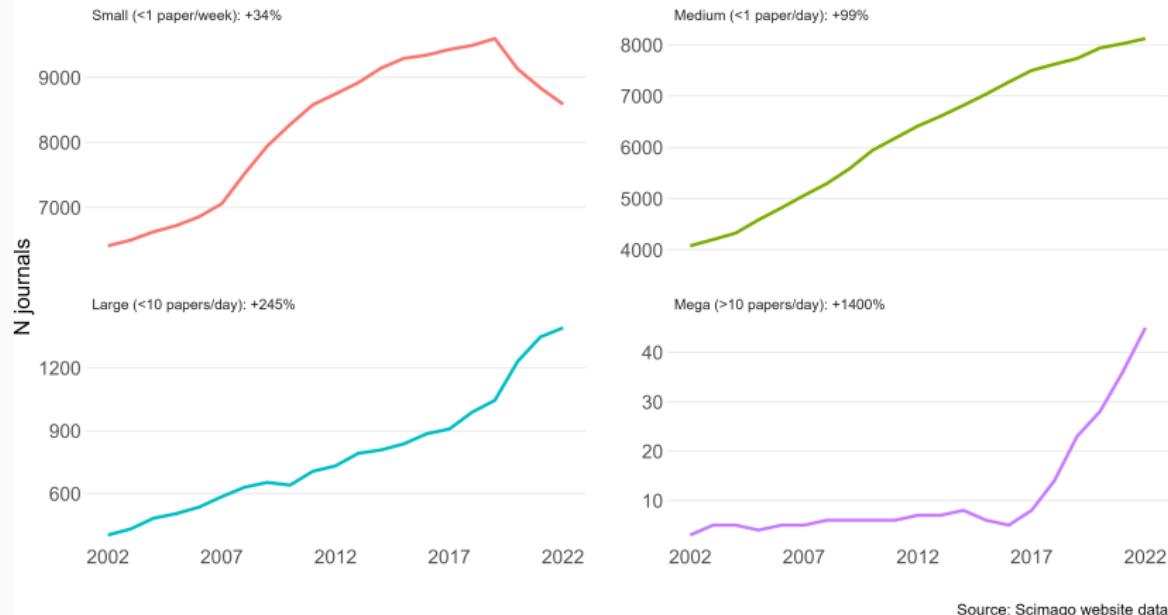
Bigger journals



Source: Scimago website data

The rise of mega-journals

Number of journals by class of size, 2002-22



Source: Scimago website data

What's going on?

Trends:

- Growth means **concentration**, especially for **new** players

Why?

- Scientists tend to **flock** to journals with high reputation
- Hard to set up, but if you have one, **exploit** it

Threats

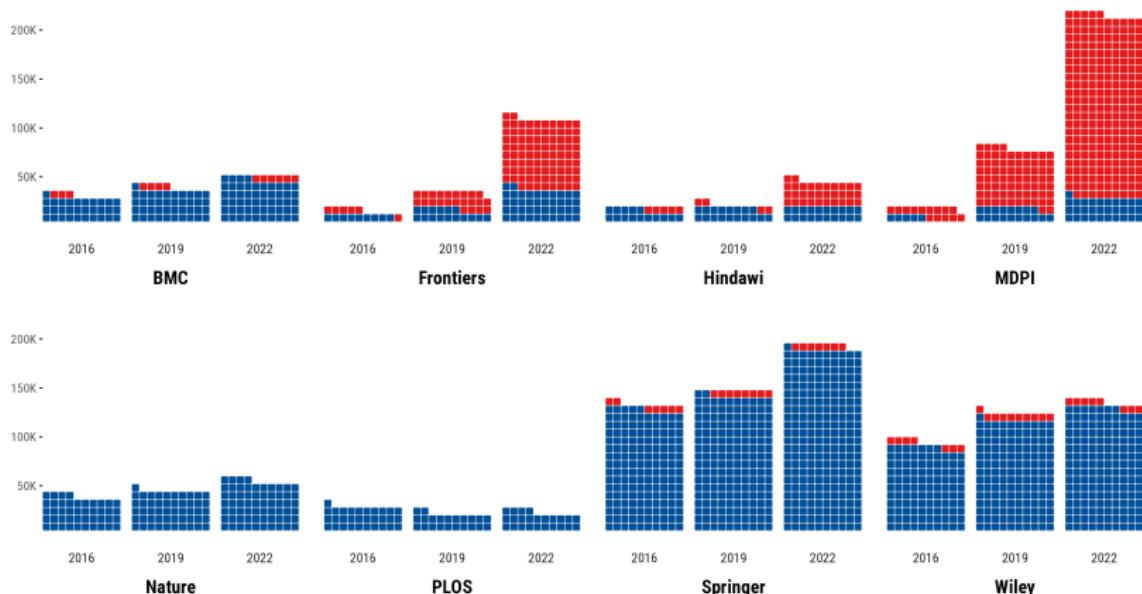
- How much can a journal **inflate** before it **loses** reputation?
- Risk of **instability** of quality signals

The role of special issues

Not so **special** after all

Number of papers published in **regular** vs **special** issues, 2016-22

One square = 800 articles



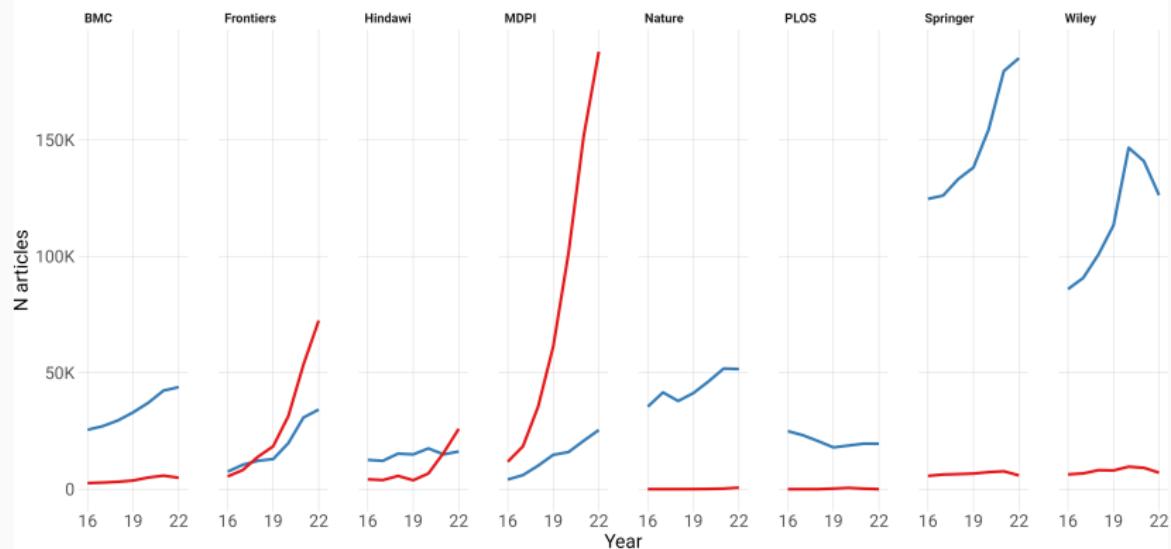
Source: data scraped from the publisher's website

Note: Special Issues are called Collections at PLOS and Topics at Frontiers. For MDPI Collections, Sections and Topics not shown.

Not so special after all

Number of papers published in **regular** vs **special** issues, 2016-22

Wiley decrease in 2022 likely due to limited coverage of Wiley papers in 2022

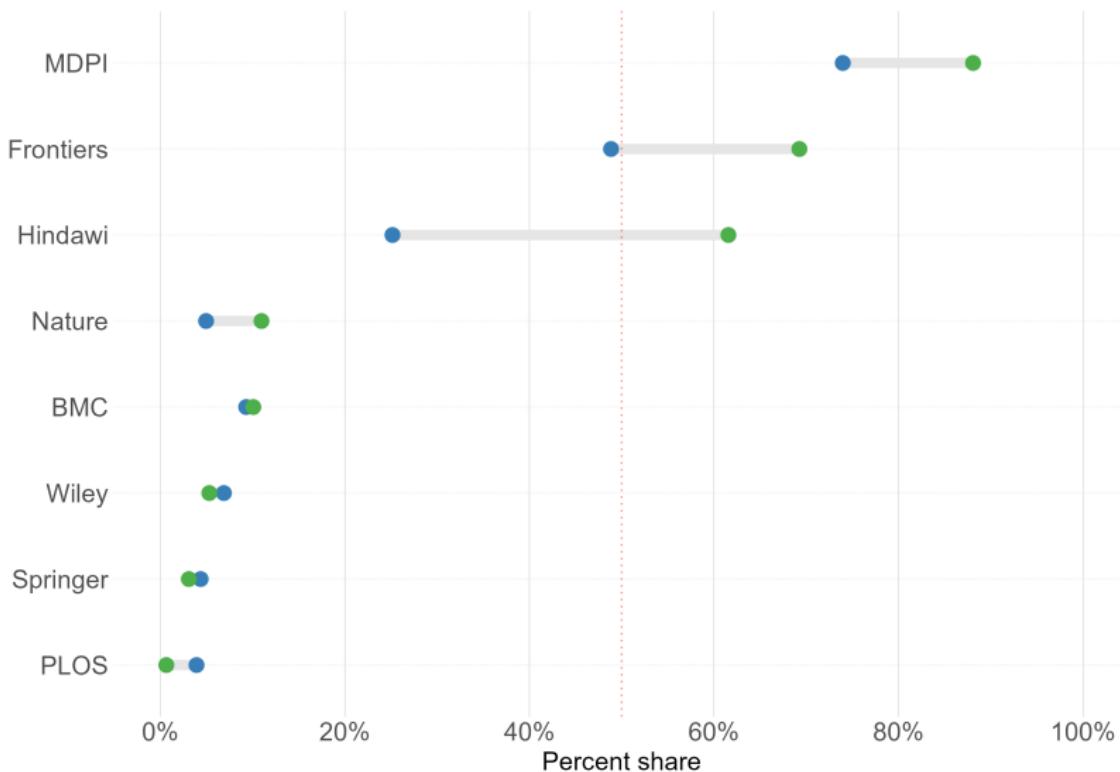


Source: data scraped from the publisher's website

Notes: Special issues are called Collections at PLOS and Topics at Frontiers. For MDPI Collections, Sections and Topics not shown.

Journals at some OA publishers are **mostly** special issues

Evolution of the share of papers appearing in Special Issues, 2016 to 2022



Source: data scraped from the publishers' website
Special issues are called Collections at PLOS and Topics at Frontiers. For MDPI Collections and Topics not shown.

What's going on?

Trends:

- SI as a fantastic **engine of growth** for big OA publishers

Why?

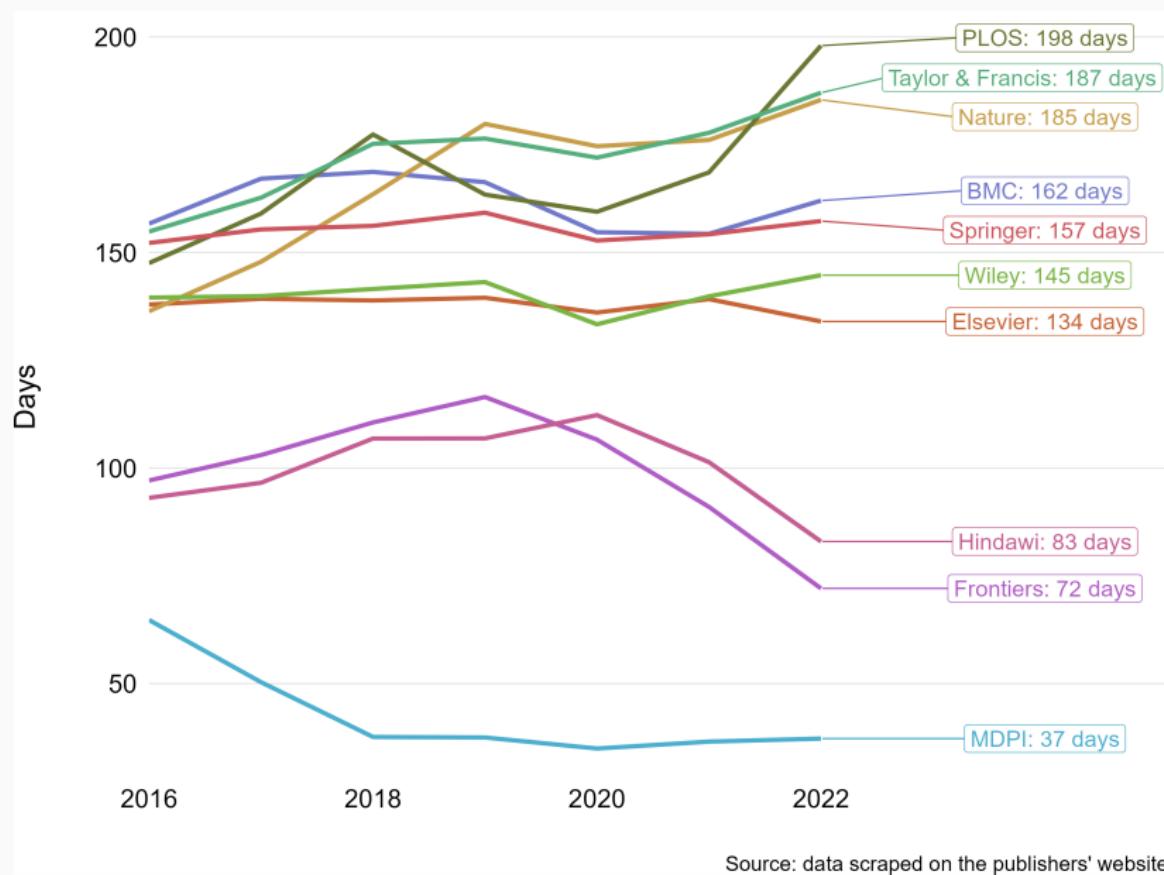
- Mobilization of an **army of guest editors** & their networks

Threats

- Less control increases **chance of exploitation** by authors
- Potential **crisis** of the SI model (Hindawi, IJERPH delisting)

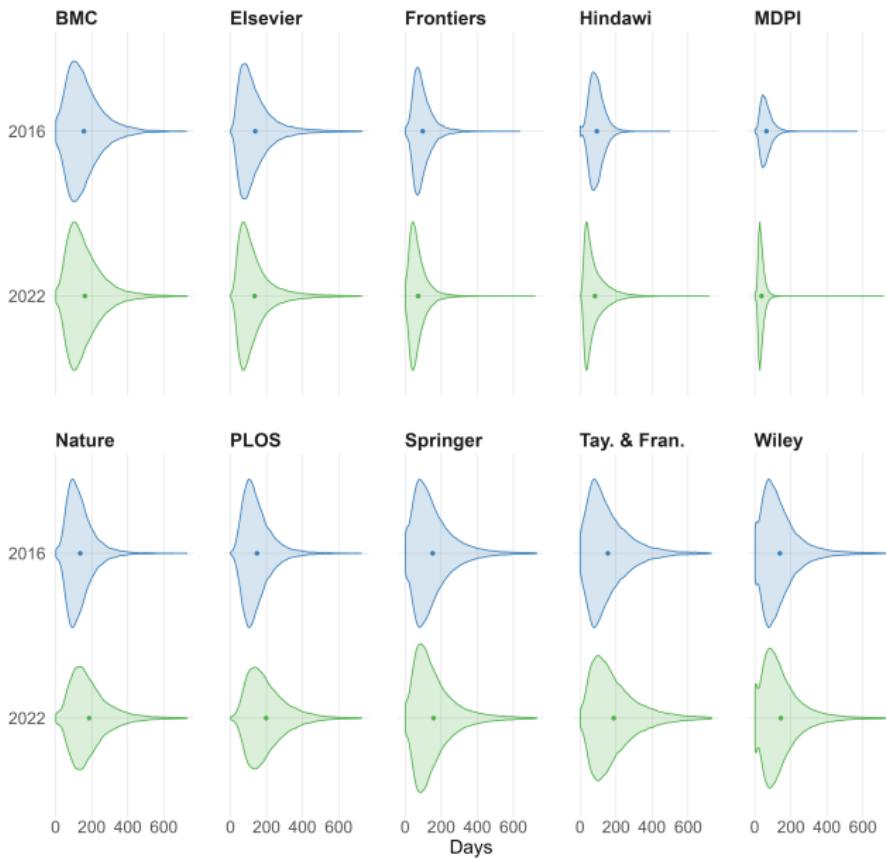
Turnaround times

Turnaround times have **decreased** for all for-profit OA publishers

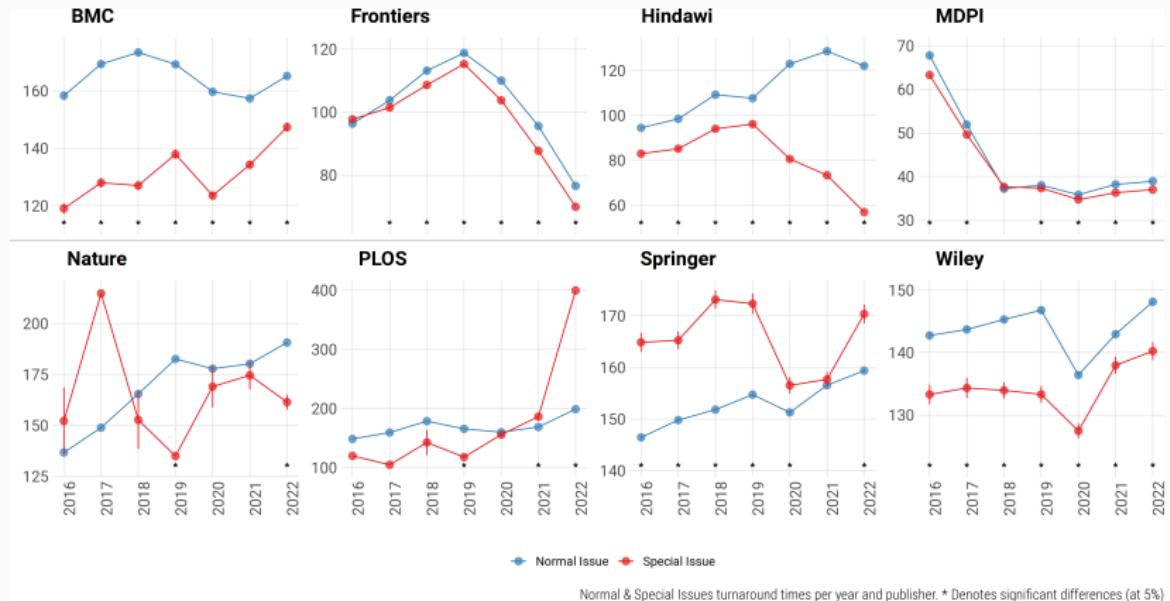


Turnaround times are getting **more homogeneous**

Article heterogeneity in turnaround times by publisher, 2016-22



Lower TATs for Special Issues



What's going on?

Trends:

- TAT can be due to **inefficiencies** – good that they go down

Why?

- **Convergence** of authors & OA publishers incentives

Threats

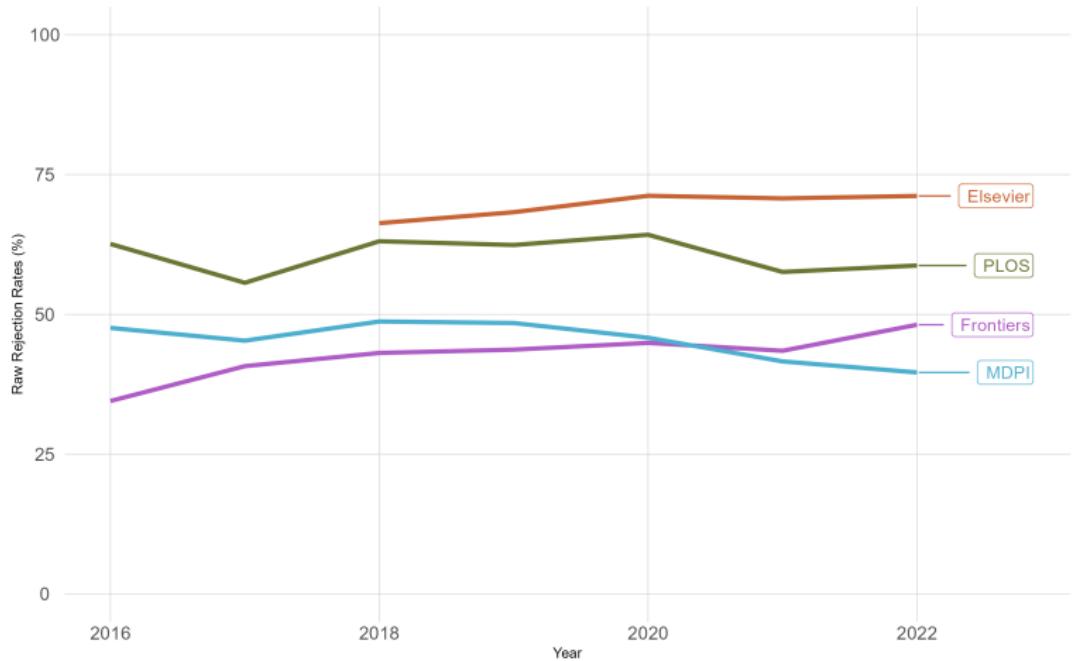
- Lower TAT must still allow for **proper peer review**
- Some TAT **so low**, it casts doubts on quality

Rejection rates

Rejection rates: absolute values

Evolution of raw rejection rates

Raw rejection rates calculated by publishers using own protocols (not standardised)

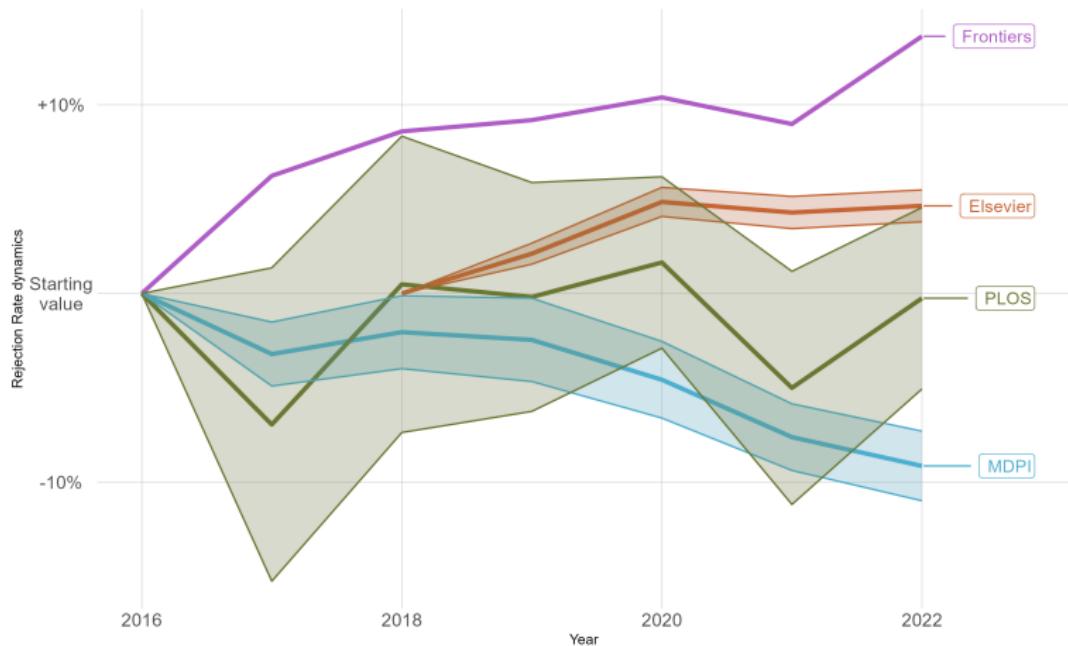


Source: web scraped data

Rejection rates: normalized

Evolution of normalised rejection rates

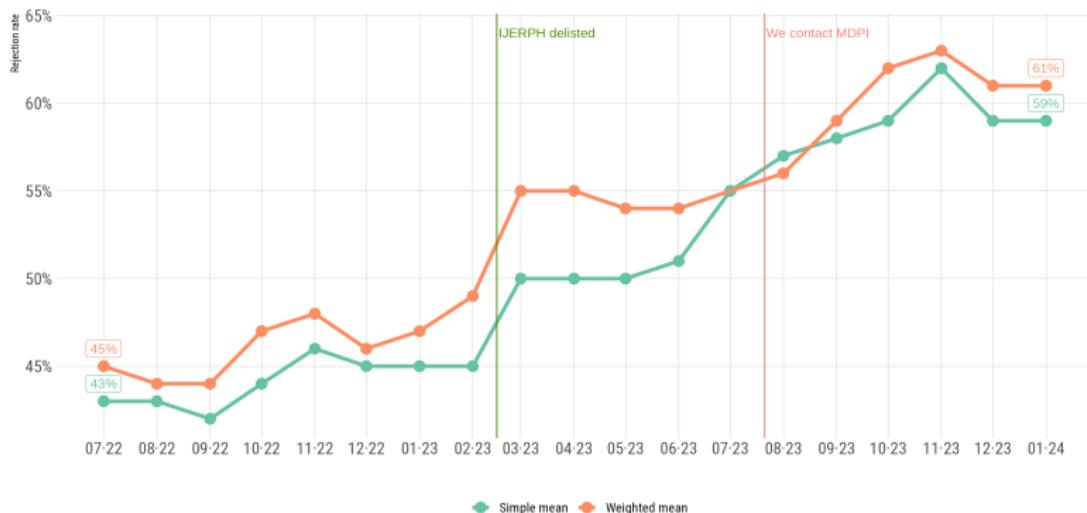
With respect to the first year in our dataset



To be fair: RR at MDPI on the rise since 2023

Monthly Rejection rates at MDPI, 2022-2023

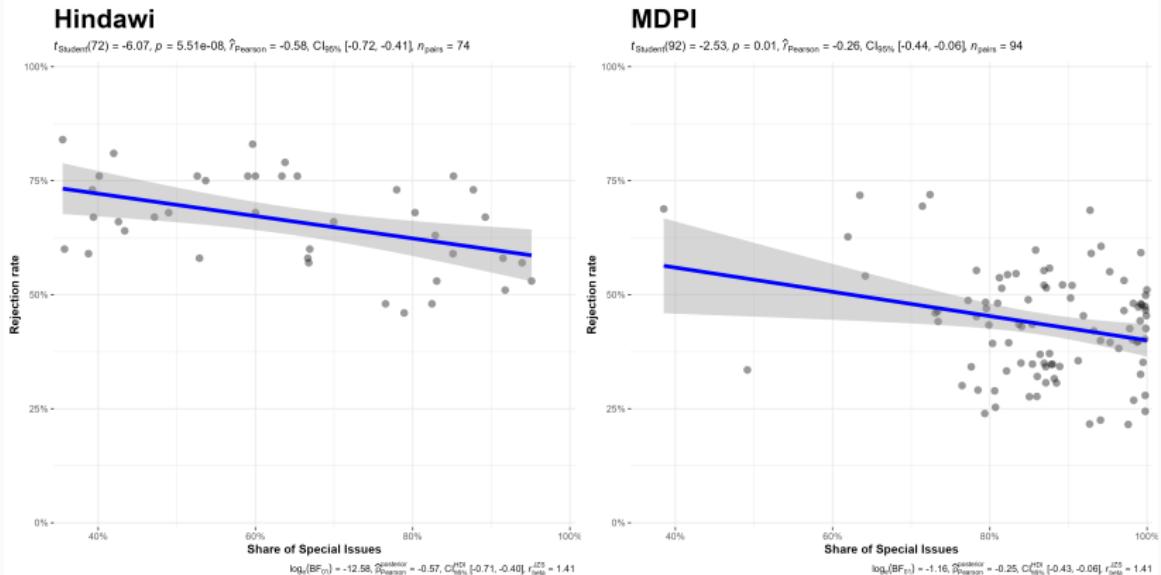
Simple or weighted by the number of papers published in each journal



More SIs, less rejections

Share of Special Issues and Rejection Rate at Hindawi and MDPI

92 MDPI journals with an IF as of January 2023, 72 Hindawi journals for which we have data



What's going on?

Trends:

- Rejection rates are **decreasing** at some key publishers
- **Increasing** at others
- Very little data

Why?

- **Convergence** of authors & OA publishers incentives

Threats

- Lower rejection rates might mean **lower quality**
- Risk of **instability** of quality signals

Impact Factor inflation

Indicators of impact: Impact factor, Scimago Journal Rank

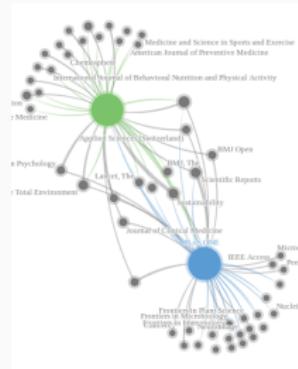
We measure **Impact Factor Inflation** as the ratio of IF to SJR

Impact Factor:

- cites/document at N years
- easily gamed

SJR: citation network counts

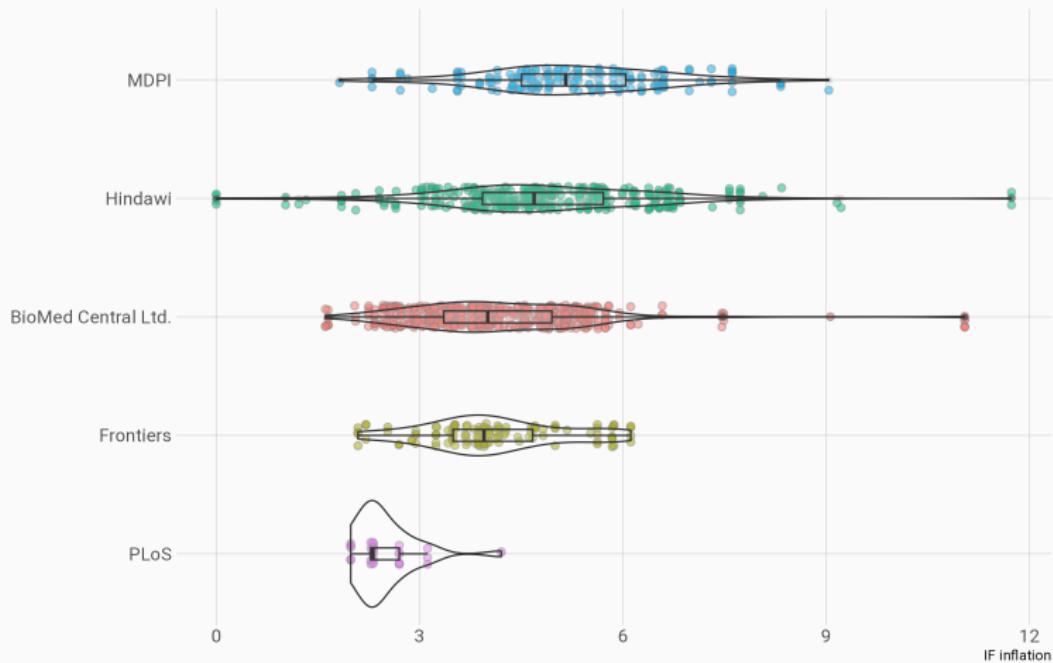
- Limits prestige from single source
- More prestige if cited by relevant journals
- Normalizes for field size
- Less easily gamed



IF inflation 2021: some publishers

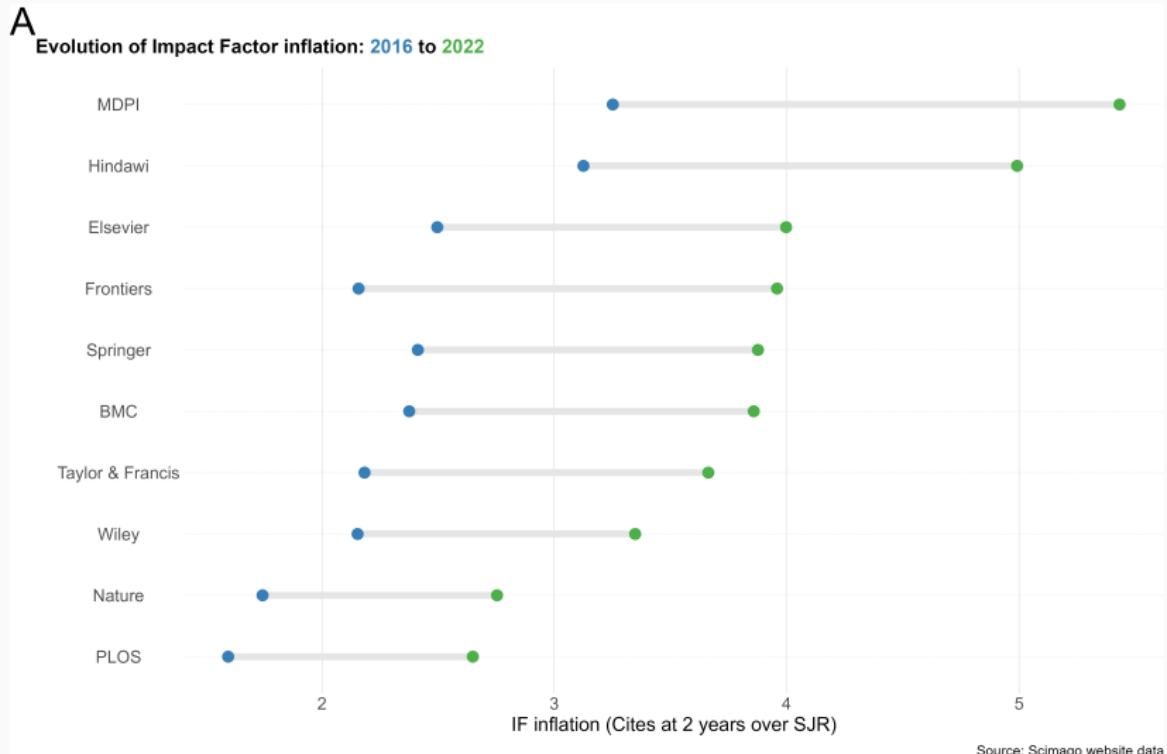
Impact Factor inflation, 2021

2y cites over SJR

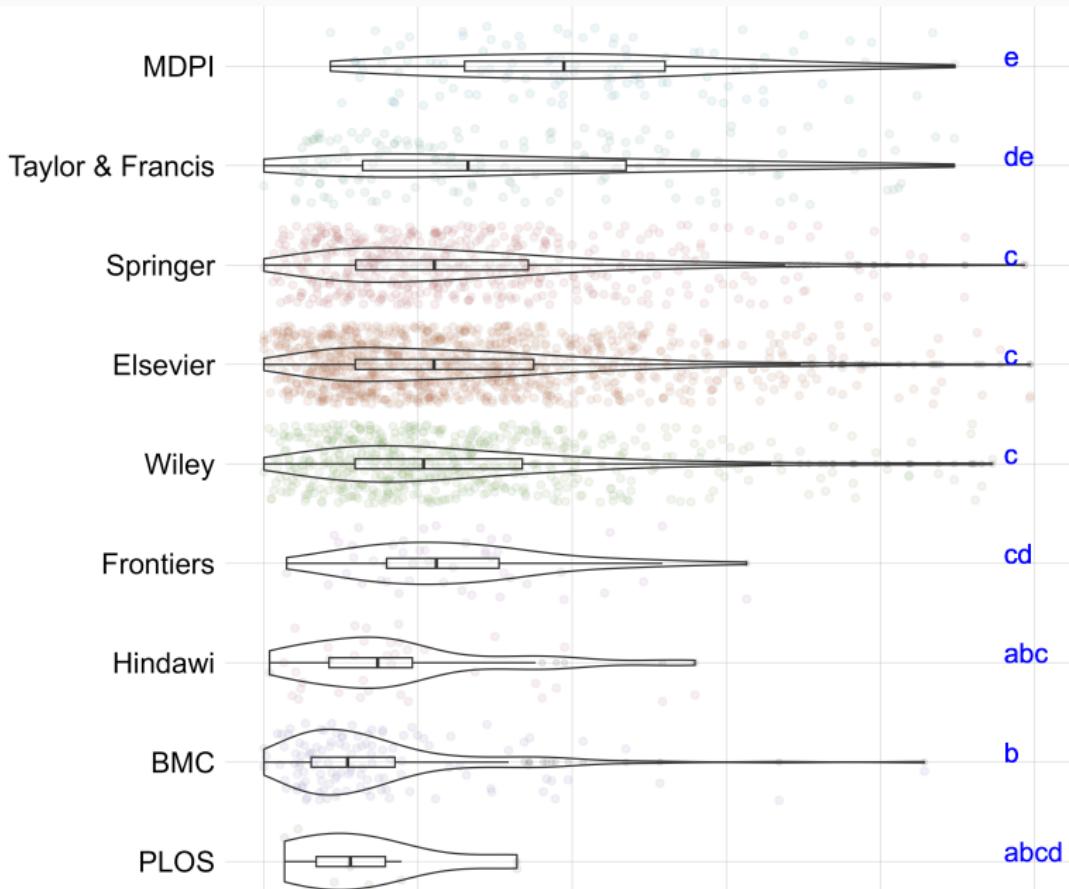


Scimago data – analysis MH, PC, PGB, DB

Evolution of IF inflation



IF inflation: why? **Self-cites**



What's going on?

Trends:

- IF is **inflating** – more so at some publishers

Why?

- **Goodhart's law:** *When a measure becomes a target, it ceases to be a good measure*

Threats

- Risk of **instability** of quality signals

At a glance

At a glance

Strain indicators at a glance: 2022 and evolution 2016-22

	2022					Change 2016-22				
	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION
Overall	2816k	38%	116	62%	3.3	+47%	+27pp	-23	-1pp	+1.1
Elsevier	498k	--	134	71%	4.0	+41%	--	-4	+5pp*	+1.5
MDPI	264k	88%	37	40%	5.4	+1080%	+14pp	-28	-8pp	+2.2
Springer	250k	3%	157	--	3.9	+52%	-1pp	+5	--	+1.5
Wiley	231k	5%	145	--	3.3	+36%	-2pp	+5	--	+1.2
Frontiers	114k	69%	72	48%	4.0	+675%	+20pp	-25	+14pp	+1.8
Taylor & Francis	105k	--	--	--	3.7	+59%	--	--	--	+1.5
Nature	57k	11%	185	--	2.8	+32%	+6pp	+49	--	+1
BMC	44k	10%	162	--	3.9	+73%	+1pp	+5	--	+1.5
Hindawi	39k	62%	83	74%	5.0	+139%	+36pp	-10	+3pp*	+1.9
PLOS	19k	1%	198	59%	2.6	-23%	-3pp	+50	-4pp	+1.1

At a glance

Strain indicators at a glance: 2022 and evolution 2016-22

	2022					Change 2016-22				
	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION	TOTAL ARTICLES	SHARE SPECIAL ISSUE	TURNAROUND TIME (DAYS)	REJECTION RATE	IMPACT INFLATION
Overall	2816k	38%	116	62%	3.3	+47%	+27pp	-23	-1pp	+1.1
Elsevier	498k	--	134	71%	4.0	+41%	--	-4	+5pp*	+1.5
MDPI	264k	88%	37	40%	5.4	+1080%	+14pp	-28	-8pp	+2.2
Springer	250k	3%	157	--	3.9	+52%	-1pp	+5	--	+1.5
Wiley	231k	5%	145	--	3.3	+36%	-2pp	+5	--	+1.2
Frontiers	114k	69%	72	48%	4.0	+675%	+20pp	-25	+14pp	+1.8
Taylor & Francis	105k	--	--	--	3.7	+59%	--	--	--	+1.5
Nature	57k	11%	185	--	2.8	+32%	+6pp	+49	--	+1
BMC	44k	10%	162	--	3.9	+73%	+1pp	+5	--	+1.5
Hindawi	39k	62%	83	74%	5.0	+139%	+36pp	-10	+3pp*	+1.9
PLOS	19k	1%	198	59%	2.6	-23%	-3pp	+50	-4pp	+1.1

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Thank you!